



Cloud developments at NIIFI

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Cloud developments at NIIFI

- Which cloud?
- What does it provide?
- The architecture
- Virtual networks
- Live migration
- ARC/SGE cluster deployment



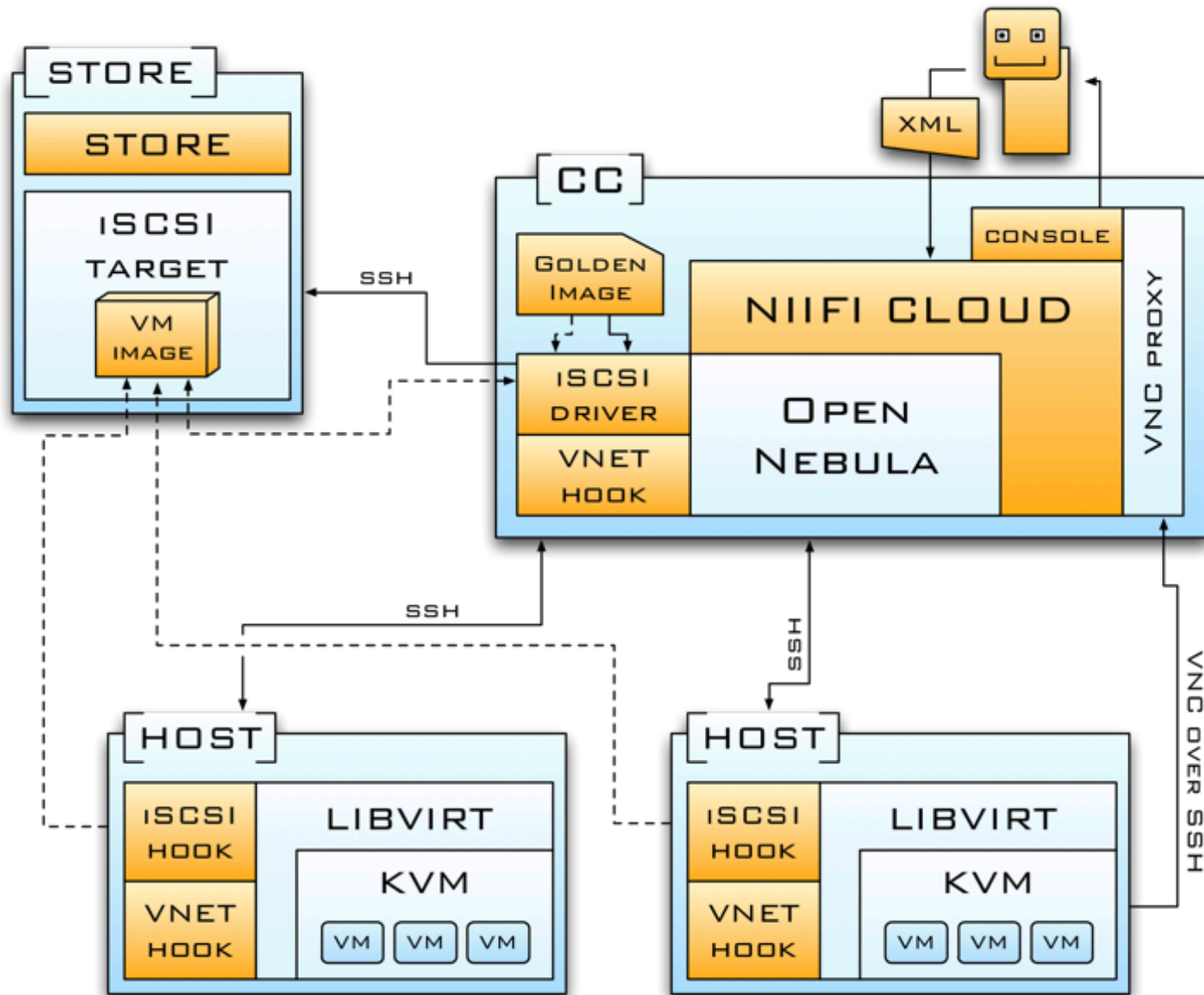
Which cloud?

- Software as a Service (SaaS)
 - e.g. Salesforce, Google Docs
(application)
- Platform as a Service (PaaS)
 - e.g. Google AppEngine
(programming platform, database)
- **Infrastructure as a Service (IaaS)**
 - e.g. Amazon, RackSpace
(virtualized IT infrastructure)

What does it provide?

- Users can ask for:
 - virtual machines
(one or several)
 - connected by virtual networks
(private or public)
 - selecting from a list of images we provide
(currently only debian, but we will extend the list)

The architecture



Virtual networks

- Private virtual networks
 - Layer 2 connection
 - up to 255 VM in a network
- Public virtual networks
 - Strong firewall
 - DHCP

Live migration

- Libvirt + KVM
 - New host logs in to the iSCSI target
 - KVM starts to dump the memory
 - Memory is iteratively copied
 - When they are almost at sync: suspend
 - Copy the rest, then: resume
 - Old host logs out

ARC/SGE cluster deployment

- Head node image (debian)
 - NFS for worker node boot and session dirs
 - DHCP which automatically adds the new worker nodes to SGE
 - SGE master
 - ARC's A-Rex/GM
- Worker node image
 - Simply boots from the head node

Future plans

- HA of the cloud controller
- Replace OpenNebula (own code maybe?)
- Hotplug, Coldplug
- Encryption
- Multipath
- GUI



Thank you

EMI is partially funded by the European Commission under Grant Agreement INFSO-RI-261611